

however the following thermogram resumed a strongly contrasted appearance. The rather quiet week of February 2-9 (fig. 4) had rising harbor and Gulf Stream temperatures till the 7th, after which a cool wind drove temperatures down again. On the warmest days, February 5 and 6, an appreciable diurnal range again appeared.

Spring profiles.—The week of March 3 to 10, 1929 (fig. 22), while showing a cooler northern half of the Gulf Stream than some winter profiles, already began to exhibit the warm shoal-water spires of summer. In the earlier part of the week, Key West and Habana temperatures were, as in summer, above those of the Gulf Stream. But a strong northwest wind the 5th and 6th depressed Key West Harbor temperatures 6° and Habana 2° . At the same time, the cool-water portion of the Gulf Stream was widened at the expense of the warm, owing, apparently, to a greater contribution of water from the Gulf of Mexico.

In the week of May 12 to 19, 1929 (fig. 23), the relative coolness of the northern portion was still in evidence. It was scarcely less marked, however, than the cool water on the Cuban side. The stream was warmest in the middle. As the notations on the thermogram indicate, this was a windy week, with east and southeast winds of force 3 and 4, and with a sea that kept the ship rolling considerably. Thus, it is not surprising to find rather smooth profiles and no more than 0.5° F. daily range of temperature. In spite of the wind, however, Key West Harbor temperatures continued a degree or two above those of the Gulf Stream. With the quieter conditions of the following week (fig. 24), Key West temperatures shot up 2° , and the surface of the Gulf Stream rose 1° , while daily ranges increased to 2° or 3° . The highest temperatures, May 22 and 23, occurred between 2:30 and 4:00 p. m.

Five temperature, density, and salinity profiles run across the Gulf Stream between Key West and Habana and between Miami and Nassau by the writer, in April, 1929, brought out the following facts: (1) Reef and bank water was the most saline; (2) southeast Gulf of Mexico

and Cuban shore water was the least saline; (3) cool streaks (?) in the left half of the Gulf Stream were the most saline parts of the stream, though less saline than the waters of the Florida keys or Bahama banks. It seems likely that the cool streaks at this time were made up of water upwelling from the more saline layer which is not far below the surface in the left portion of the Gulf Stream. In view of the lower salinity of the southeastern Gulf of Mexico, it is evident that these cool streaks could probably have had no immediate relation with the water of the southeastern Gulf north of Key West. This southeastern Gulf water, furthermore, was cooler than the lowest temperatures found in the Gulf Stream south of Key West.²³

A detailed discussion of these observations, which included 174 with a hydrometer, and a collection of 64 samples which were later titrated at Harvard, through the kindness of Dr. Henry B. Bigelow, will be presented in a separate paper elsewhere.

CONCLUSION

The surface waters of the Gulf Stream in the Straits of Florida are diverse in temperature and are subject to considerable variations from day to day. Much of the interdiurnal variation is closely related to the weather, especially the wind, which disturbs the surface. Characteristic differences in the general shape of the surface temperature profile across the Straits seem to arise from the frequent occurrence of cool northerly winds in winter, reducing the surface temperatures on the Key West side, and from the prevalence of warm southeasterly winds in summer which raise the temperatures there. There are, however, certain fundamental differences in temperature which can not be related to the immediate weather. These will be discussed in another paper, to follow this one immediately. The thermograms have all been tabulated in detail, and weekly means have been derived for publication.

²³ Charles F. Brooks, Surface Temperature, Density, and Salinity profiles across the Straits of Florida. Bull. of the National Research Council, 1930.

INTERNATIONAL METEOROLOGICAL ORGANIZATION

ARTICLE I

The present International Meteorological Organization, created at Utrecht in 1878,¹ revised at Paris in 1919, at Utrecht in 1923, and at Copenhagen in 1929, comprises:

1. The conferences of the directors.
2. The International Meteorological Committee.
3. The secretariat of the organization.
4. The commissions of the organization.

ARTICLE II

1. The conferences of the directors have for their principal function the discussion of administrative questions and the means of execution, in order to put themselves in accord on the methods of observation and of calculation, to decide on the common work that ought to be undertaken, and to create eventually the necessary commissions; purely theoretical questions are not in the jurisdiction of the conferences.

2. The conferences are composed of the directors of the independent national meteorological networks of all nations.

3. The conferences are convoked by the International Meteorological Committee; they ought to take place at least every six

years. They ought also to be convoked extraordinarily by the committee when urgent questions arise for its consideration. Convocation is obligatory when it is called for by a quarter of the members of the conference.

4. The president of the committee gives notice of the meeting by circular a year in advance to the members of the conference (and the presidents of the commissions) and causes to be designated by a vote of the committee the date and the precise place of the meeting.

5. The president of the international committee convokes directly all the members to the conferences; the secretariat establishes the list and publishes it each year after having brought it up to date.

6. The members of the conference have the right to have themselves represented if they are not able personally to take part in the conference. The substitutes ought to belong to the service represented or to be a part director of the service; he should not be a member of the conference under another title.

7. The decisions are taken by a majority of the voices of the members present, save in case a vote by countries² is demanded, even by a single member.

8. The conference of the directors names the International Meteorological Committee, the powers of which end at the ordinary conference following.

9. The conference chooses its president, who rules over its functions during the entire duration of the session.

ARTICLE III

INTERNATIONAL METEOROLOGICAL COMMITTEE

1. The members of the committee ought to belong to different countries and be members of the conference.

² One understands by this word all countries that govern themselves. (Example Dominion of Canada.)

¹ So definite a statement as this must have been based on grounds not available on this side of the Atlantic; nevertheless, whatever may have been in the minds of the directors in attendance on the Utrecht meeting of 1878, no mention is made in the proceedings of that meeting of the creation of an International Meteorological Organization. The report of the Berne meeting of 1880 bears the title "Report of the International Meteorological Committee" and thus it became the habit of some, at least, to think of the organization as a whole as that known by the title just mentioned. In commenting upon the statutes of the International Meteorological Organization, immediately following this article, the present writer adopts the view that the title, "International Meteorological Organization," was first broached at the Paris meeting of 1907, and approved at the Paris meeting of 1919.—A. J. H.

2. The number of the members of the committee is fixed by the conference of the directors.

3. The committee has the right to replace a decedent or resigned member.

4. When a member of the committee ceases to be director, he is continued on the committee until the next meeting of the committee.

5. The committee may add to itself in a consultative title such persons whose counsel appears useful to it.

6. The committee names an executive council composed of the president and four other members chosen from itself. Interior regulation, approved by the committee, rules the functions of the executive council.

7. The committee supervises the execution of the decisions of the conferences in the interval between meetings; it receives and should approve the reports of the commissions; it takes all necessary measures for the development of international meteorology.

8. The president of the committee is elected by the committee and has charge of its functions until the next ordinary session of the conference.

9. The retiring president, in case he has been elected for more than four years, is not immediately eligible. This clause is applicable only after 1935.

ARTICLE IV

THE SECRETARIAT OF THE INTERNATIONAL METEOROLOGICAL ORGANIZATION

1. The secretariat, functioning under the direction of the president of the International Meteorological Committee, is charged with the organization of the meetings of the conference, of the committee, and of the commissions, as well as of the publication of the minutes. It constitutes, likewise, a center of documentation relative to the meteorological services of the entire world, and it assists, to the extent of its means, the president of the committee and the presidents of the commissions in the execution of their work.

2. The expenses of the secretariat are covered by the optional subventions of the different national services in the proportion of 4,000 gold francs for a large State, 2,000 gold francs for a medium sized State, 1,000 gold francs, or a lesser sum, for other States.

3. The executive council of the committee manages the budget of the secretariat, the compatibility of which is communicated each year to members of the conference.

4. The definite seat of the secretariat is fixed in Switzerland.

5. The composition of the secretariat and the assignments of its personnel are fixed by the executive council of the committee.

ARTICLE V

COMMISSIONS

1. The commissions, instituted by the conference or by the committee, ought to include at least one member of the committee. In the newly created commissions the first president is nominated by the conference or by the committee.

2. Once constituted, the commissions have the faculty of completing themselves and of organizing their work at their will.

3. The presidents of the commissions, who are not members of the committee, are invited to assist in the sessions of the latter and to take part in the discussions with a consultative voice. The presidents furnish, at the beginning of each session of the committee or of the conference, a report on the work of their commissions.

4. The commissions meet at least once every three years. The designation of the place and of the date of the meetings is made after preliminary consultation between the president of the committee and that of the commission. The decisions are taken by the majority of votes of the members present, save in the case where the vote by countries is demanded.

5. Those persons who wish to propose a question for the deliberation of the conference, of the committee, or of a commission, ought first to request the interested presidents that this question be placed on the order of the day, and to send, not later than two months before the meeting, a short summary of this question to the secretariat, who will distribute copies of it to members of the conference who express the desire, to members of the committee or of the commissions interested.—*Translated from the French by Margaret and Charles F. Brooks.*

REMARKS ON THE FOREGOING

Meteorologists on this side of the Atlantic have been more or less confused by references to the International

Meteorological Organization, a title evidently used to indicate the body best known in this country as the International Meteorological Committee. For the benefit of our readers the following outline history of the successive steps taken in the main by Europeans to standardize meteorological methods and practices since the beginning of activity in that matter is presented.

The history readily divides itself into two periods the first of which came to a close with the World War and the second, or present, having its inception at the Paris, 1919, conference of directors.

The first or original meeting of meteorologists was held at Leipzig in 1872, in pursuance to a call issued by Messrs. Wild, Bruhns, and Jelinek, directors of meteorological services at St. Petersburg, Leipzig, and Vienna, respectively. There were 52 persons in attendance at this conference which continued for three days, during which many practical questions were discussed and arrangements were made for the first meteorological congress to be held in Vienna in 1873. A permanent committee of seven members was elected at Leipzig, which functioned as a sort of executive committee for many years.

The Vienna congress did not create a formal organization or enact by-laws for the government of its sessions. It did, however, create a number of subcommittees for the consideration of sundry questions that came before the congress; these subcommittees were later changed to "commissions" with a more or less permanent form of organization.

A conference was held in Munich in 1891, Paris in 1896, Innsbruck in 1905, and the next one was scheduled for 1914, but by reason of the World War was not held, and with the close of the war came also the temporary end of all international agreements.

The International Meteorological Committee is first mentioned in nonofficial document No. 14 printed by authority of the Meteorological Council of Great Britain in 1881, under the title "Report of the International Committee Meeting at Berne 1880." In that report it is stated that the first meeting of the committee was held in Rome on April 22, 1879. There were present at this meeting Messrs. Cantoni, Capello, Hann, Mascart, Mohn, Neumayer, Scott, and Wild. The last named was elected president of the committee and Scott was elected secretary. This committee which in the earlier years of its existence was charged with carrying out the recommendations of the congresses, making arrangements for the conferences of directors, etc., seems never to have clearly formulated its sphere of action until the meeting of the committee held in Paris in 1907 when M. Mascart the retiring president prepared a statement of the regulations that had been acted upon in practice since 1879. Before the règlement could be acted upon the war broke out and approval was not obtained until 1919. In that year the directors of the meteorological services of Great Britain, France, and Italy, after an exchange of views, agreed to summon an international conference of directors in Paris in September, 1919. At this meeting the organization proposed in 1907 was approved. Doubtless an added reason for its approval was the creation of an international union of geodesy and geophysics in which sections devoted to meteorology and terrestrial magnetism and electricity were included. Both of these subjects had been embraced by the international body of meteorologists and magneticians.

It was at the Paris meeting of 1907 that the name *International Meteorological Organization*³ was first defined as consisting of—

1. Conference of directors.

2. The International Meteorological Committee.
3. Commissions.

The International Meteorological Committee continues to function, as in the past, as the executive committee of the conference of directors the body as a whole being known as the International Meteorological Organization.—A. J. H.

THE INTERNATIONAL CONVENTION FOR SAFETY OF LIFE AT SEA, LONDON, 1929

By E. B. CALVERT,¹ Chief of Forecast Division

[Weather Bureau, Washington, May, 1930]

There were two international conventions held in 1929 which resulted in agreements of high importance to meteorology. The first of these, the International Convention on Safety of Life at Sea, was held in London from April 16 to May 31. On the latter date it was signed by the delegates of the 18 maritime nations that were represented. No nation failed to sign. In all there were 172 officially appointed delegates and experts, and a considerable number of advisors not included in the delegations. These statistics are mentioned merely to indicate the magnitude of the assembly and its importance. It was the second international conference of its kind, the first having been held in 1914 as a result of the *Titanic* disaster.

Meteorology had small part in that first conference in 1914. Scarcely could it be said that "it was among those present." As a matter of fact, so far as can be ascertained, no meteorologist was in any national delegation. Nevertheless, it must have been recognized that weather is a menace to safety of navigation with which ships must contend because several pages of the convention as signed were devoted to meteorology but in a form that placed no obligation on ship masters to furnish weather reports. It consisted of codes, tables, and generalizations which were of no use to anybody and in fact were obsolete by the time the convention articles were published.

Meteorology had a far different status in the 1929 convention. This was due in considerable part to the International Meteorological Committee, aided in some degree, no doubt by the strong recommendation of the Chief of the United States Weather Bureau that a meteorologist be included in the United States' delegation. At meetings of the subcommittee on synoptic weather information held in London in June, 1928, a resolution was adopted urging representation of the International Meteorological Organization in the convention and naming the president of the International Meteorological Committee as its representative. This resolution was brought to the attention of the British Government which called the convention and controlled official procedures. The resolution also came to the attention of the officials of the various governments invited to participate in the convention. The position of the British Government was in effect that it could not recognize unofficial organizations but that any government was at liberty to compose its delegation to represent any phase of safety of life at sea it might desire; also, that during the convention advisors outside of the official delegations could be utilized. Three nations had meteorologists in their delegations—Great Britain, Germany, and the United States.

As is customary in international conferences, committees were formed to handle different subjects. The committee on safety of navigation was one of the five

major committees thus formed. The major committees in turn appoint subcommittees. Meteorology came within the scope of the committee on safety of navigation and was the first subcommittee to be formed. Each nation had the privilege of naming a member. It was expected that the subcommittee would be small but the actual number was 19, representing Italy, England, France, United States, India, Australia, Germany, Russia, Netherlands, Norway, Denmark, Canada, and Japan. The subcommittee was augmented by Colonel Gold, of the British Meteorological Service, and Captain Bureau of the French service by special designations of the chairman of the delegations of their respective governments. These facts are mentioned to indicate the recognition given to meteorology in the 1929 convention in contrast with the convention of 1914.

As might be expected, many viewpoints were advanced by the membership of the subcommittee, all of which required patient discussion and adjustment, but in basic principles there were few divergencies of opinion. Details of the discussions and descriptions of the proposals that were rejected, modified, or accepted, are interesting but it is not practicable to discuss them within the limits of this program.

The committee on navigation accepted the report of the subcommittee with no material modification and by a large majority vote, but strong objection was offered by the Danish delegation to the article which stipulated that instructions to ships concerning meteorological observations should be given by the national meteorological service of the country under whose registry the ships are operating. This clause was lengthily debated and the subcommittee's report was approved with only three negative votes. However, the Danish delegation carried their point in the plenary session.

The 1929 convention as signed is divided into two parts. The first consists of covenant or convention articles and the second of regulations governing procedures in application of the convention provisions. In the 1914 convention meteorology was not mentioned in the convention articles and therefore it had no legal standing. Inconsequential paragraphs pertaining to weather, which were so worded as to place no obligations on anybody, appeared solely in the regulations.

The meteorological subcommittee at London drafted two convention articles, one dealing with obligatory reports to be made by all shipmasters, the second enjoining governments to encourage certain meteorological arrangements of importance to safe navigation. They are, respectively, articles 34 and 35 of the convention.

Article 34 enumerates certain dangers to navigation, which masters are compelled to report under penalty. Dangerous ice, derelicts, and "dangerous tropical storms" are specified. On the other hand, it places obligation on each administration to take all steps it considers necessary to insure that the dangers when reported be promptly

¹ Presented before the American Meteorological Society, Washington, 1930.